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of

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for

A MINIATURE KEYBOARD FOR A PERSONAL DIGITAL ASSISTANT AND AN INTEGRATED WEB BROWSING AND DATA INPUT DEVICE

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

Your petitioners, George Gerpheide, Brian Taylor and Richard D. Woolley, who are citizens of the United States, and whose addresses are 3481 South Monte Verde, Salt Lake City, Utah 84109, 15 Rollingwood Ln, Sandy, Utah 84092, 550 E. Heather Rd., Orem, Utah 84097, and 1824 North 120 West, Tooele, Utah 84074, respectively, pray that letters patent may be granted to them as inventors of **A MINIATURE KEYBOARD FOR A PERSONAL DIGITAL ASSISTANT AND AN INTEGRATED WEB BROWSING AND DATA INPUT DEVICE** as set forth in the following specification.

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BACKGROUND

1. The Field Of The Invention.

This invention relates generally to data input and Internet navigation devices. More specifically, the invention provides compact and convenient keyboard data input for a variety of mobile devices, including personal digital assistants (PDAs), an integrated Internet navigation, and mobile phones. An important feature is the ability to provide audible feedback so that the user has precise information about keystrokes, and an optional microphone input for voice transmission and messaging purposes.

2. The State Of The Art

The state of the relevant art spans several disciplines because the present invention not only integrates a plurality of different technologies, but its applications are quite broad. The proliferation of small information appliances has brought many challenges to users who want to enter data into these devices. For example, there are now many different types of personal digital assistants (PDAs) which help users store and

organize information. Such information has included appointments, calendars, addresses and telephone numbers.

Data entry of alphanumerical information has always been a challenge in PDAs because there is a relatively small surface area available for data entry. For example, providing a separate key for each letter of the English alphabet and the numbers 0 through 9 requires a significant amount of space on a small information appliance. Nevertheless, the entry of alphanumerical data is becoming more and more important because of the Internet.

One solution offered in the prior art is a collapsible keyboard. In other words, the keyboard unfolds to form a larger keyboard which can be coupled to a small electronic appliance such as a PDS. Obviously, this keyboard can only be used when the user has a surface on which the keyboard can be unfolded, and the PDS attached. This necessarily limits the use of the keyboard.

The importance of the Internet, the e-commerce that it has generated, and new forms of communicating has created the need for other types of information appliances

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that can do more than store dates and addresses. For example, PDAs such as the PALM(TM) PILOT(TM) and the HANDSPRING(TM) VISOR(TM) can now provide access to the Internet. Cellular telephones and smart phones are also becoming Internet capable. Accordingly, users can now send and receive email or even browse the World Wide Web using devices that were not originally intended for use with the Internet.

Disadvantageously, means of entering alphanumerical data is a problem for such small devices. One method that is used to enter alphanumerical data is through the use of a shorthand script. However, this generally requires the user to employ a small stylus, and to memorize the script. Furthermore, the stylus can be lost, or even dropped during use. Other methods of input include using miniature keyboards that often require the use of a stylus if they are to fit within the available surface area.

Of interest is the method employed by cellular telephones because they are so limited in surface area. Letters can be entered using the keypad. The user presses a key which represents a group of letters. The user must then select which letter among the group of letters that

is to be entered. However, there are some limitations to this method. For example, the letters Q and Z are not provided on a standard keypad. Furthermore, there are a limited number of discrete keys.

It would therefore be an advantage over the prior art to provide a new system for entry of characters on a small electronic appliance that provided all of the options of a standard keyboard, yet was small enough to be mobile, and not require the use of a stylus to operate.

The examples given above are small appliances which are becoming ubiquitous in the marketplace. However, the present invention also enables the operation of a new type of device. Specifically, the present invention makes possible an integrated web browsing and data input device. But to understand the need for such a device, it is useful to consider the nature of the Internet.

One of the maturing technologies on the Internet is the World Wide Web which is a type of information format. The World Wide Web (the Web hereinafter) is a loose collection of web sites which are comprised of viewable web pages. Web pages are text and graphics that are formatted according to specific protocols, such as the

Hyper Text Markup Language (HTML).

Web pages are always viewed using a web browser. Moving from web page to web page, or navigating using the web browser, is commonly referred to as web browsing or surfing. Typically, web browsing is accomplished by following interconnecting links between different web pages. This link feature has given rise to a specific hierarchical structure of the web pages. Accordingly, web browsing is often a process of moving "forwards" and "backwards" between linked web pages.

The nature of the World Wide Web typically precludes the input of large amounts of data. In other words, alphanumerical data input is typically limited to short and cryptic phrases, such as when entering user names, passwords, and abbreviated sentences in chat rooms. Therefore, while it is important to be able to input alphanumerical data, it is not necessary to dedicate a large amount of space to this activity on a handheld device when the primary function is more often going to be movement among web pages, downloading and uploading data, and sending and receiving email. Nevertheless, entry of characters is difficult on a handheld device.

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The prior art includes attempts to combine keyboard input and touchpad navigation input on a handheld device. Typically, the two data input areas are combined on a single touchpad surface. The user must activate different modes of operation for the touchpad surface to function as a keyboard or as a touchpad. Disadvantageously, the user must constantly switch back and forth between the user modes, as well as remember which user mode is currently in use. It would be an advantage over the state of the art to provide separate keyboard and touchpad input areas and surfaces in a small, handheld device so that the user is not confused or hampered by an awkward interface when entering data.

Another problem with the state of the art arises when a smaller than normal area is to be used for a keyboard. However, requiring a user to use a stylus to press keys is not desirable for various reasons. But if a stylus is not used, it may be difficult to know exactly which key has been pressed. In other words, each key now comprises a very small amount of surface area, and broad fingertips can more easily stray because it can be a little more difficult to center a finger on a desired key.

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Accordingly, it would be an advantage over the prior art that when using fingers on a small keyboard that is operated by the "hunt and peck" method (typically using a single fingertip to press keys), that the user receive precise feedback so as to be informed not only that a key was pressed, but exactly which key was pressed.

Another problem with the state of the art is the difficulty in providing voice message capabilities. As use of the Internet has grown, new methods of communicating have evolved. For example, the transmission of audio and voice messages is becoming a more popular method of communication because speaking is generally a faster way of preparing a message than typing. Accordingly, what is needed in a handheld data input and web navigation device is the capability to receive voice input so that a voice can be transmitted or recorded as a voice message.

OBJECT AND SUMMARY OF THE INVENTION

It is an object of the present invention to provide a system for the convenient input of alphanumerical data into a portable electronic appliance such as a PDA.

It is another object to provide a system which does not require the use of a stylus in order to accomplish data input on a miniature full function keyboard that is coupled to a small electronic appliance.

It is another object to provide a system which is a capacitance sensitive touchpad that functions as a keyboard that can be coupled to a PDA or mobile telephone.

It is another object to provide a system for improved Internet navigation and data input.

It is another object to provide a customized web navigation device that facilitates movement through and interaction with the World Wide Web.

It is another object to provide a customized web navigation device that is less cumbersome to use, and is smaller than a conventional keyboard.

It is another object to provide a customized web navigation device that is conveniently coupled to the Web utilizing wire or wireless technology.

It is another object to provide a customized web navigation device that has at least one switch that enables a user to select a predefined web site, and to provide access to the predefined web site.

It is another object to provide a customized web navigation device that includes a variety of methods of data input.

It is another object to provide the customized web navigation device that includes a miniaturized keyboard, a separate touchpad, and a microphone for the live transmission or recording of voice messages.

It is another object to provide the customized web navigation device that includes audible feedback which identifies which key was pressed by a user.

It is another object to provide a customized web navigation device that enables other convenient web navigation options including scrolling and zooming in and out of web pages.

The above objects are realized in a specific illustrative embodiment of a system and method for providing a miniature keyboard that operates by utilizing a finger to touch a capacitance sensitive touchpad. In a presently preferred embodiment, a touchpad is divided up into predefined zones that are assigned to be all of the various characters on a keyboard. The touchpad keyboard is relatively small so that it can be coupled to an

information appliance and operated in the manner that is customary for the device.

In accordance with a first aspect of the invention, audible feedback can be provided to the user so that the user knows that a key has been pressed.

In accordance with a second aspect of the invention, the audible feedback is specific enough to identify the identify of the key pressed, such as through a voice that states the name of the key.

In accordance with a third aspect of the invention, the touchpad keyboard includes a mechanical wheel disposed in a side thereof which enables rapid and convenient scrolling-type functions.

In accordance with a fourth aspect of the invention, the touchpad keyboard is used for data input to the Internet, and for facilitating web navigation.

In accordance with a fifth aspect of the invention, the touchpad keyboard is disposed within a handheld web navigation and alphanumerical data input device which is coupled to a computer or other web browser terminal. The data input device includes both a touchpad keyboard which can be used with fingers, and a separate touchpad surface

for activities which include web navigation and cursor control.

In accordance with a sixth aspect of the invention, the web navigation device preferably includes a microphone to facilitate the recording of voice messages, or the live transmission of voice data over the Internet.

In accordance with a seventh aspect of the invention, the data input device includes at least one dedicated switch which causes a web browser to access and display data from a desired web site.

In accordance with an eighth aspect of the invention, the data input device includes a touchpad surface which can be used for such things as web navigation, cursor control, selection and deselection of objects, scrolling within web pages, and zooming of web pages.

These and other objects, features, advantages and alternative aspects of the present invention will become apparent to those skilled in the art from a consideration of the following detailed description taken in combination with the accompanying drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a top elevational view of a touchpad keyboard that is made in accordance with the principles of the presently preferred embodiment.

Figure 2 is a flowchart of the processes performed by the touchpad keyboard of the preferred embodiment.

Figure 3 is a diagram of a PDA and the touchpad keyboard that are coupled at communication ports to thereby transmit data therebetween.

Figure 4 is a diagram of an alternative embodiment for coupling the PDA to the touchpad keyboard via a cable.

Figure 5 is a diagram of a touchpad keyboard that has a scrolling wheel embedded therein for easy manipulation of data on a display screen of a portable information appliance.

Figure 6 is a logical block diagram of processes in the touchpad keyboard circuitry when audio feedback is provided.

Figure 7 is a block diagram of an alternative embodiment of using the touchpad keyboard in a web navigation and data input device.

DETAILED DESCRIPTION OF THE INVENTION

Reference will now be made to the drawings in which the various elements of the present invention will be given numerical designations and in which the invention will be discussed so as to enable one skilled in the art to make and use the invention. It is to be understood that the following description is only exemplary of the principles of the present invention, and should not be viewed as narrowing the claims which follow.

The presently preferred embodiment of the invention is a capacitance sensitive touchpad keyboard. The technology utilized in the touchpad keyboard is taken from the touchpad technology of Cirque Corporation, and used in its various lines of computer touchpads. The touchpad technology is based upon teachings found in U.S. Patent Nos. 5,305,017, 5,861,875, 5,565,658, 5,757,368 and 5,767,457. The technology is also found in co-pending non-provisional U.S. Patent application serial no. 09/603,417, filed June 22, 2000.

Figure 1 is a top view of a touchpad keyboard 10 that is utilizing the capacitance sensitive touchpad technology of Cirque Corporation. The touchpad keyboard has disposed

thereon a keyboard layout 12 (the grid lines). Note that a keyboard overlay 12 is only useful to the user, it does not actually provide information to the touchpad circuitry. The technology behind the capacitance sensitive touchpad is only important insofar as it enables the touchpad keyboard 10 to detect and determine position of a finger on the touchpad surface. Thus, the touchpad keyboard is capable of detecting the presence of a pointing device, such as a finger, and then focusing in to determine a location of the finger.

Figure 2 is a flowchart of the relevant processes that occur in the touchpad circuitry. This flowchart will illustrate the functionality of the presently preferred embodiment. The first step 100 is to detect the presence of an object on the touchpad keyboard 10. The next step 102 is to then localize or focus on very specific coordinates of the object. Fine or precision object location determination is accomplished using various software and hardware of the touchpad circuitry. However, it should be realized that the precision with which the invention must function is only that which is sufficient to determine in which zone the object is located, not

where in the zone the object made contact.

Once the touchpad keyboard 10 has determined where an object has made contact with the touchpad surface, it is necessary in step 104 to determine a zone that corresponds to the determined location. Accordingly, there must be a database that defines the boundaries of each zone on the touchpad keyboard 10.

This zone corresponds to a specific keyboard key. Thus the next step 106 is to determine which key on the touchpad keyboard corresponds to the zone of contact. It is then necessary to determine the signal that corresponds to the key in step 108. Obviously, the signal will probably be unique to the specific electronic appliance being used. The signal is then transmitted to the electronic appliance in step 110.

Steps 106 and 108 involve translation processes. In other words, information from one source is then used to identify information for another step. These translation processes are typically performed by a database. In the presently preferred embodiment, the database can be a look-up table. Thus, the look-up table has been

programmed to correspond to the desired keyboard overlay 12 that illustrates the zones. Once the corresponding zone is determined, the touchpad circuitry generates an appropriate signal.

The appropriate signal will be whatever signal the electronic appliance is designed to receive that corresponds to the zone or key that was touched. For example, a certain signal will correspond to the letter "A", and a different signal will correspond to the letter "B". Accordingly, the touchpad circuitry includes a signal generator that generates appropriate signals.

It was stated earlier that the touchpad keyboard 10 is physically and logically divided up into zones or regions. In other words, the touchpad keyboard 12 includes a keyboard overlay 12 that is the physical division of zones on the touchpad surface. Each zone will typically define a single key. However, a mode key can alter the character that other zones will generate.

Software or firmware is utilized to determine where a finger or other pointing device makes contact with the touchpad keyboard. This is the logical division of the zones. In other words, the touchpad will sense a finger

anywhere on the touchpad surface, but divides the touchpad surface into zones as defined by the look-up table or other database structure. Because the zones are defined in software or firmware, they can be easily modified if a different keyboard configuration or overlay is desired.

It is observed that the keyboard layout 12 in figure 1 is only an example of any number of possible layouts. For example, the keyboard layout 12 can correspond to a complete QWERTY keyboard. However, it is noted that most portable electronic appliances are not even capable of recognizing all of the keys on a QWERTY keyboard, such as function or ALT keys. That is because they are unnecessary for the functions of the portable electronic appliances. Most portable electronic appliances are only interested in entering basic alphanumeric data such as the alphabet and numbers 0 through 9. It may not even be necessary to provide lower and upper case. Nevertheless, the presently preferred embodiment of the invention is capable of providing a signal that corresponds to all the keys on a QWERTY keyboard.

A good reason for limiting the number of zones that are available on the keyboard layout 12 is the size of the

touchpad keyboard 10. The width and length dimensions of the touchpad keyboard 10 can vary, but it is typically credit card sized. With these dimensions, and the fact that it is preferable not to use a stylus, there is a practical limit to the number of keys that can be disposed on the touchpad surface. Therefore, mode keys can be useful to change the definition of corresponding zones. It is noted that a typical depth of the touchpad keyboard 10 is relatively thin, such as 3 to 5 mm. However, this can be varied as necessary.

It has been stated that a preferred application of the touchpad keyboard 10 of the present invention is to use it with an electronic appliance. For example, consider a PALMPILOT(TM) or other PDA. It would be advantageous to provide a keyboard that could be used without having to set the PALMPILOT(TM) down. Accordingly, the keyboard should be capable of being used while grasping the PDA.

Figure 3 is provided as an illustration of a PDA 20 being used with a touchpad keyboard 10. The PDA has a communications port 22 disposed on a bottom edge. The touchpad keyboard 10 includes a compatible communications

port 24 on a top edge thereof. When coupled together, the touchpad keyboard 10 should be relatively rigid with respect to the PDA 20, thus making the combination easier to grasp in one hand. The other hand is then free to press the desired keys.

In an alternative embodiment, it may be desirable to provide some distance between a resting position of the PDA 20, and the touchpad keyboard 10. Accordingly, figure 4 is provided as an illustration of a cable 30 that can couple the communications ports 22, 24 together. The length of the cable 30 can be varied.

In another alternative embodiment, it is observed that there are other functions of the electronic appliance that the keyboard may be better at. For example, scrolling is a desirable feature, especially when working on a narrow screen. The PDA 20 may even have keys dedicated to this function. However, the keys may not be easily located, and would certainly not be located on the touchpad keyboard 10. Accordingly, figure 5 is provided as an illustration of a portion of a touchpad keyboard 40 that includes a scrolling wheel 42. The scrolling wheel 42 is disposed in the touchpad keyboard 40, but exposes an

edge thereof that a user can roll up and down. The edges thereof may be grooved to ensure good contact with a finger or thumb.

In another alternative embodiment, the size of the touchpad keyboard is probably small enough that some people may have difficulty in immediately determining if they actually made contact with the desired key, especially if a display screen on the attached PDA is difficult to see. Accordingly, it is possible to provide audible feedback to the user. The audible feedback can be in the form of a voice pronouncing the name of the key or zone that was touched. The volume would likely be kept low but sufficient to hear. Implementation of audible feedback would require additions to touchpad circuitry, including a speaker and a memory chip that includes the digitized sounds to be played for each zone.

Figure 6 is provided as a logical block diagram of the components of touchpad circuitry that are necessary for audible feedback to occur. The touchpad circuitry logic 50 includes circuitry 52 for detecting the object and determining its position, a look-up process 54 for determining the key that corresponds to the location of

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the object, a look-up process 56 for determining the signal that corresponds to the key, and a transmission process 58. However, once the key has been determined, this information can be sent to a process 60 for determining a corresponding audio message stored in a memory. This audio information is then sent to a microphone 62 where it is generated.

In another alternative embodiment, it is envisioned that it is possible to couple the touchpad keyboard to the PDA or other electronic appliance at all times. For example, the touchpad keyboard can be disposed underneath a cover that is typically folded down over a display screen when the electronic appliance is not in use. Because the touchpad keyboard is wider than it is long, it may be necessary to turn the touchpad keyboard to make it fit underneath a cover.

Figure 7 shows another alternative embodiment of the invention is a data input device 70 which is coupled via a wire or wireless link to a computer or other device which operates as a web browser terminal 72. The computer or web browser terminal 72 is in turn coupled to the Internet 74 and the World Wide Web (the Web). It is noted that the

web browser terminal 7 could also be a television that is coupled to the Internet 74.

Before explaining the data input device 70 in more detail, it is observed that the Web provides access to web sites which are comprised of web pages. Internet access also means that a user can use other convenient forms of communication via the Internet 74, such as email, voice mail, and live voice and audio communication.

By means of its layout and the functions provided, the present invention is intended to provide a more convenient method of data input and web navigation. For example, the layout lends itself to grasping or holding the device in one hand by providing a gripping surface along an edge or underneath, while the other hand uses the data input interfaces. A user can sit back in a chair, away from a full-sized keyboard, and easily surf the Internet 74. By providing a miniature touchpad keyboard 76, the user does not have to lean forward to enter any alphanumerical data. A full-function keyboard 76 is provided in the form of a touch-sensitive surface, such as is found in a touchpad of the Cirque(TM) Corporation. The touch-sensitive surface is preferably a capacitance-

sensitive surface that has an overlay template defining the keys of the keyboard. An overlay will be able to have better graphics than, for example, an LCD display can generate.

It should be apparent that the overlay or the touch-sensitive surface can provide tactile feedback to the user. For example, ridges on the overlay can separate the individual keys. Alternatively, the different keys can have different textures. However, all textures and raised surfaces can be eliminated so that the overlay is integral to or flush with the touchpad surface so that it is smooth to the touch.

The touch-sensitive surface provides information regarding the position of a finger or stylus on the surface. This information is translated so that the key which corresponds to that position on the touch-sensitive surface is provided to the computer or web browser terminal 72. For example, the touch-sensitive surface can provide the ASCII code for the key which the computer or web browser terminal 72 expects to see.

In combination with the touchpad keyboard 70 is the ability to generate feedback to the user about the

identity of all keys that are pressed. This information is advantageous to the user because of the reduced size of the touchpad keyboard 70. It is not enough that the user knows that a key was pressed, because a finger used to actuate the key may have been misaligned with the desired key. Accordingly, this embodiment of the present invention also provides audible feedback in form of a unique and spoken word for each key.

For example, if the user presses the space bar, the data input device will cause the data input device to send a signal to a speaker to thereby almost instantaneously cause the word "SPACE" to be played by a speaker. The speaker can be located in the computer or the web browser terminal 72, or even the data input device 70 itself. What is important is that the user hears a digitized voice representation which corresponds to each key on the keyboard as it is pressed. In this way, there is no confusion as to which key has been pressed by the user

Furthermore, given the small size of the touchpad keyboard, it is likely that the user will not be looking up at what is being typed on a display, but will instead be looking down at the keyboard. Therefore, the user will

instantly know if a wrong key has been pressed without looking up to read what has been typed. The user can backspace over incorrect characters without even looking up from the data input device 70, and then retype the correct characters.

Those skilled in the art will understand that there are alternative ways to achieve this desired audible feedback. For example, the computer 72 can be programmed with a software driver. The driver intercepts the ASCII code which represents a key that has been pressed, and executes a subroutine which causes the digitized voice representation of the pressed key to be generated at a desired speaker.

In combination with the dedicated touchpad keyboard on the touch-sensitive surface is a separate touchpad 78. The touchpad 78 can also be a CIRQUE(TM) brand touchpad which already provides desired web navigation features. These features includes such things as cursor control, web navigation by moving backwards and forwards through web pages, selection and deselection of objects, dragging of objects, scrolling within web pages, and zooming in and out of web pages.

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It is noted that the features described above are the most common or desirable for web navigation. However, the Internet 74 and particularly the Web are very dynamic. It is therefore explicitly stated that the touchpad 78 can be programmed to include other desirable navigation features. At present, the touchpad of the present invention includes a scrolling area for scrolling up and down in a page disposed on the far right-hand side of the touchpad, moving forwards and backwards in web pages on the top of the touchpad, scrolling left and right in a page disposed on the bottom of the touchpad, and zooming in and out on the far left-hand side of the touchpad. Clicking and double-clicking are actuated by tapping once or twice on the touchpad 78, respectively. Movement of a cursor is caused by simply touching the touchpad 78 and then moving the finger.

In an alternative embodiment, it is observed that the touchpad 78 can function to record a signature, or even to function as a digitizing tablet. By providing a separate touchpad surface, the present invention avoids the confusion to the user of having both a keyboard and a touchpad in a single touch-sensitive surface. In the

preferred embodiment, the touchpad keyboard 76 is placed above the touchpad 78, but obviously this arrangement can be changed in alternative embodiments.

Because the present invention includes both a keyboard 76 and a separate touchpad 78, the data stream to the computer or web browser terminal 72 will need to include two types of information. Those skilled in the art will recognize that data from the touchpad keyboard 76 and the touchpad 78 can be transmitted, for example, using a packet scheme. Each packet identifies the source of the data, so that it can be sent to the appropriate input.

It is also noted that the preferred embodiment requires only one hand to hold the data input device 70. Advantageously, pressing keys on the touchpad keyboard 76 and using the touchpad 78 does not cause the data input device to sway or make data input difficult. This is because the embodiment includes a hand grip aligned along a vertical axis on the underside of the device. Therefore, the data input device 70 does not require a lap or desktop surface on which to rest when in use. Alternatively, the hand grip can also be angled or made horizontal, depending upon the user's preference.

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In this embodiment, the data input device 70 also includes at least one switch which provides rapid access to a selectable web site. In other words, the web browser terminal 72 is caused to display the web site upon activation of the switch.

The switch can also be programmed to go to any desired web site simply upon touching or depressing the switch. The switch can also be marked with a temporary overlay template, or other means of marking which is more permanent.

Another alternative embodiment envisions the capturing of a signature on a pressure sensitive paper to thereby provide a tangible record of the event.
It should be assumed that the present invention will function properly on other networks and using other protocols than just those provided by the Web or the Internet 74.

It should also be assumed that the touchpad 78 used for web navigation is responsive to a finger or a stylus and functions with any type of touchpad. Preferably the touchpad utilizes a capacitive-based technology, electromagnetic, electrostatic, ultrasonic, optical,

resistive membrane, or other finger or stylus-responsive device. The switch or switches and the keyboard are preferably based on mechanical switches, membrane switches, rubber-dome switches or any other appropriate switch activation technology.

Communication links between the data input device 70 and the web browser terminal 72 can include wire, wireless, infrared, radio frequency, ultrasonic, etc. The web browser terminal should be considered to include a video game console, WEBTV®, a television with a digital set top box, etc.

A connection between the computer or the web browser terminal 72 and the Web should include telephone modem, cable TV modem, DSL, cellular phone, fiber optic cable, RF satellite modem, T1, T3, Ethernet, twisted pair cabling, etc.

Another feature of the preferred embodiment is the manner in which the data input device 70 can be configured. The data input device 70 can be configured using pre-configured settings which are sent with the device. Alternatively, the user can access pre-configured settings which are available on a web site. Accordingly,

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the data input device 70, the computer or the web browser terminal 72 would store the settings in non-volatile memory such as flash memory or on a hard disk.

It is to be understood that the above-described arrangements are only illustrative of the application of the principles of the present invention. Numerous modifications and alternative arrangements may be devised by those skilled in the art without departing from the spirit and scope of the present invention. The appended claims are intended to cover such modifications and arrangements.

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